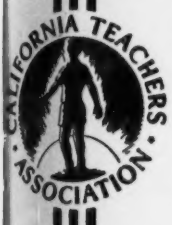

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THE EDITORS SAY:

The Doctor Prescribes

THIS month's feature article by Dean Ernest Hilgard of Stanford University is both tonic and sedative. It should quiet the unrest of those of us in educational research who have become frustrated and jittery at our seeming difficulty in making an exact science of education. It should provoke some of us courageously to have enthusiasm for new and obviously more demanding methods in educational research.

Dr. Hilgard is well qualified to prescribe for us. His familiarity with psychological and social research and their statistical procedures provide him with the breadth of vision needed for what we should like to call wisdom in this area of educational problems. We would be bold enough to essay an interpretation of Dr. Hilgard's remarks to the Fourth Annual Educational Research Conference held last fall. We acknowledge that any interpretation by other than the author is filled with the possibility of mis-interpretation.

His first charge to us as educational research workers is to avoid isolation in our endeavors in all ways possible; either isolation from the social setting in which education is placed, or from the structural organization by which it is being conducted. By implication the warning suggests that at least a part of our educational research has had this fault. However, as Dr. Hilgard carefully reminds us, there have been and may be kinds of information which may be profitably collected under such limitations. But he would surely expect these to be deliberately contributory to larger perceptions and not be discovered for themselves alone.

Research in its enriched perceptual setting is going to require closer contacts between the researcher and those primarily concerned with the results of the research — the parent-citizen, the teacher-practitioner, and the administrator-executive. In Dr. Hilgard's own apt phrasing, the research must be done in the community situation rather than the laboratory or classroom situation. *The demands for educational research must come from the society and the results of the research must be returned to the society.*

His challenge to us is that we must learn how to define our research and to conduct it so that the "outsiders" in the "game" can become "insiders." The rules, the language of the "game," the objectives and the techniques, must become such that all eligible players can actively participate. Educational research cannot afford to be a "spectator sport," nor can it be limited to a series of plays which only experts can perform.

Dean Hilgard assures us from experience in other fields of social research that, if the "game" is well designed and well played, its principle objective, namely a better and completely successful school program, will follow.

Educational Research: Some Friendly Suggestions*

ERNEST R. HILGARD
Stanford University

PROFESSIONAL educators all share a certain impatience with the results of educational experimentation. We have nothing to point to with the confidence of an engineer who can show television as a result of research, or a physician who can point to the cures wrought by penicillin. How satisfying it would be if we had some sort of pill to give our pupils so that they would all learn arithmetic more easily! But we do not have a well-stocked educational medicine cabinet in spite of all the panaceas that from time to time have found their way there. And I am sure that we would all agree that a search for supplies for our educational medicine cabinet is not what we are after.

What, then, do we seek out of educational research? I propose two main objectives, and then I shall say something about what we can do about them and what obstacles I sense as being in the way.

1. First, we seek to clarify as best we can the task that lies before us as educators. what are we trying to do? This turns out to be an unusually stubborn and difficult question despite all the wrestling with it by educational policies commissions and others. Are we trying chiefly to sharpen the tools whereby our pupils can play their respective roles in life? Or are we going beyond this to make them enlarge their vision as to what their roles might be? Are we also seeking to modify the social order itself in order to enrich opportunities? How we answer these first questions determines how we answer the second group of questions.

2. Secondly, we try to discover how best we can achieve the ends we seek within the limitations imposed upon us by our communities, by the children who come to us, by those of us who teach. I wish to stress that because of these limitations education is an applied science and does not go on in a vacuum.

---

* Based on an address given at the Fourth Annual State Conference on Educational Research, Oakland, California, November 7, 1952.

Dr. Ernest R. Hilgard, dean of the graduate school, Stanford University, is well known in psychological circles. He has been on the Stanford faculty since 1933, having served successively as professor, department head, and dean of the graduate school. His Ph.D. was earned at Yale University in 1930.

What, now, can I say about research in relation first to educational objectives, and second in ways to attain these objectives?

Educational Objectives

Educational objectives are not determined solely by research, and if we think they are, we delude ourselves. They are determined by many considerations; some of them historical, some of them rooted in the folk-culture of our communities, some of them political and economic. But this does not mean that research is irrelevant. What can research do?

1. It can set limits to possible objectives. There are some things you simply cannot teach to some children, much as you might wish to.

2. You can estimate the climate of opinion in a community to find out what educational objectives are acceptable.

3. You can conduct community experiments in the formulating of educational objectives and in the gaining acceptance of them.

Educational objectives, once formulated and clarified, do not stand alone. The next task is to try to reach them.

Attaining Objectives

Research directed toward the attainment of educational objectives is, of course, familiar to all of us. Some of the objectives are very specific, e.g., to reduce the number of children who are underweight, or to raise the scores on an objective achievement test. Some are less precise, though equally important, such as to improve the social relationships among pupils, to increase their sense of citizenship responsibility, to reduce racial bigotry. Some objectives apply to what a teacher can do in a given classroom. Some involve the whole system, such as providing better school plants, or raising teachers' salaries in order to attract abler teachers. Research can be directed to any of these points.

I have sometimes scaled research designs in the psychological laboratory in terms of degree of impoverishment of the real world involved in these designs. For example, in the study of perception, we do a number of different kinds of experiments. The most *impoverished* of these is the study of thresholds, such as determining the level at which a light coming on in a dark room is just visible. We remove nearly everything that is interesting about light and color and form in order to do such an experiment with precision. At the next level, which I call *literal* perception, we study the matter-of-fact perception of real objects in real space, but are concerned chiefly with how we judge shape or distance or perspective. Then at an *enriched* level we study perception of objects and people in meaningful social contexts. For example, poor children asked to judge the

sizes of coins see them as larger than children from well-to-do homes. That is, the perception of coins is enriched by their value. So, too, if we have prejudices against certain kinds of people, we perceive the individual falsely because of what we bring to our perception. Perhaps this is enough to let you know what I mean by experiments dealing with impoverished, literal, and enriched perception.

If we think of educational research, we can classify it on a similar scale. We can do some kinds of research by *impoverishing* the situation. Thus we can study eye movements in reading by fitting the head into a frame and limiting the material to be read to that which can be placed on a card in such a manner as to interfere as little as possible with photographing the eye-movements. Such experiments are good science, but my impression is that they have not served education very well because of their very impoverishment. They can tell us nothing about such important aspects of reading as how the child selects a book from the library, or how much he looks out of the window when his head is not in a recording machine.

The *literal level* of educational research is represented by the rather plain and matter-of-fact studies of educational attainment, say the collection of norms on tests, and studying whether or not the Spanish-American children do less well than the others . This, too, is useful, but it has lacked something that we need.

The *enriched level* of educational research requires that we study what is happening in school and community in some total fashion. Skill learning in the school may depend on the aspirations of different socio-economic classes, on the extent to which the teachers understand these differences, as well as on teaching materials and methods.

The Enriched Level of Educational Research and a Program of Action Research

If we are to conduct educational research in the full-fledged context of school and community, we have some real problems on our hands. But education is an applied science, and educational research is applied research; education is social, and educational research is therefore applied social research. If we accept such a picture of the task of enriched educational research, to what kind of program does it lead?

1. It leads, first of all to team research.

By a research team I mean a group of people who work together in the planning and carrying out of research. The typical research team for educational research, as I am describing it, would consist of one or more persons representing administration, teaching, the community, and

research science. I am not talking about a team consisting exclusively of research scientists, for research in the context of school and community requires participation by those on the firing-line.

Team research is not easy, and there are many pitfalls. Some of these have been described recently by Bronfenbrenner and Devereux.[1] But we have to learn to work in research teams if we are to succeed.

2. *It leads, secondly, to what is coming to be known as "action research."*

Action research is a somewhat novel form of applied social research identified very much with the name of Dr. Kurt Lewin who, until his death, was experimenting with action research at the Massachusetts Institute of Technology.

The basic idea is a simple one. The idea is that social change can be studied while it is going on by some of the people who are bringing it about Let me put this another way. Suppose we wish to improve the relationship between several cultural groups in our community. We can study *how* attitudes change while we are in the midst of *bringing about* changes in attitude. The central idea is that responsible social research should have action consequences, but the only way to find out if it does is to study these consequences as a basic part of the research.

The best little manual we now have is that by Ronald Lippitt called "Training in Community Relations."[2] It shows how a workshop on intercultural relations could study itself while trying to improve relations in the community.

What I am arguing is that any significant changes in educational practices will have to come about through support for these changes by teachers, administrators, and parents. Hence the preferred design for research will include these responsible people as agents, and the research comes to have a social change aspect as well as a substantive aspect.

When we raise the question, "How can we teach social studies more effectively?" we really have two questions: (1) What do we know (or can we find out) about effective ways of teaching social studies?, and (2) How can we bring it about that teachers will teach that way, and that administrators and parents will permit them to do so if they wish? What I am contending here is that we do not separate the questions—we work on them at one and the same time. In other words, let teachers, parents, and administrators share in experiments on the teaching of social studies. To the extent that they share in the experiments, the results

---

[1] Bronfenbrenner, U., and Devereux, E. C. "Interdisciplinary planning for team research on constructive community behavior." *Human Relations*, 5: 187-203, 1952.

[2] Lippitt, R. *Training in community relations.* New York: Harper, 1949.

will already be in practice by the time the experiments are over. This is the ideal of action research, though I do not wish to make it sound too easy.[3]

Conclusion

My remarks on educational research have added up to the suggestion that we have to learn to do good research in the enriched context of school and community rather than in the impoverished atmosphere of the psychological laboratory, or the too literal atmosphere of the records office. This suggestion, if followed, would lead us into team research and action-research—some of the most difficult types of social science research.

If they are difficult, they are also promising. School people have never avoided doing what they found difficult if the difficult task held the promise of high yield in improved education.

[3] I wish to call attention to one hazard and to reply to one criticism. The hazard is that action research will turn into a sales or propaganda program with no real research accomplishment. The criticism is that no allowance is made for negative results—for action programs found unsatisfactory. The reply is that the process is cyclical—reconnaissance going on all the while—and only successful practices survive.

California Administrators Plan Research Project

The California Elementary School Administrators Association is endeavoring to discover, through a statewide research project, what constitutes the essentials of a desirable elementary school "service" program for present day California boys and girls. The project is an attempt to provide an opportunity for lay citizens to work with professional school people to determine through joint planned research just what both believe is desirable and essential in an educational program which would meet the basic needs of modern elementary school pupils.

Leaders representing 17 statewide lay and professional organizations have met with the C.E.S.A.A. Research Steering Committee to help map out the project. The seven areas into which the project will be divided are:

(1) What is the normally expected elementary pupil load? (2) What are the desirable instructional materials? (3) What are the desirable instructional personnel and services? (4) What administrative and supervisory personnel and services are desirable? (5) What operational and maintenance services and personnel are desirable? (6) What auxiliary services, including transportation and cafeteria, are desirable? (7) What special or extended educational services such as camping, classes for the mentally retarded, etc., are desirable?

Further information concerning the project may be obtained from Lewis A. Wickens, Riverside City Schools, Riverside, California, who is a member of the C.E.S.A.A. Research Steering Committee.

Recognition of Examination Questions and Its Relationship to Improvement in Score During Repeated Testing*

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and
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The Problem

IN 1947 the National Cancer Institute initiated a program of providing grants to improve cancer teaching in medical schools throughout the country. At the University of California School of Medicine the funds were used to develop an extensive program to improve instruction, and a multiple-choice examination of 182 items covering the subject matter of cancer was developed to measure the effectiveness of this program. This examination was administered to all students in each class of the medical school in the Spring of 1948. Because of the interest in the examination expressed by faculties of other medical schools, the test was revised and administered on a national scale in the Spring of 1949 to 9,358 students in thirty-two medical schools. In 1950 a second revision was administered to 12,360 students in forty-one medical schools, and in 1951 a third revision was given to 17,350 students in fifty-four schools. All the medical students at the University of California participated each time the test was administered.

One assumption upon which this program of repeated testing rested was that increased student knowledge of cancer would be reflected in higher scores on successive examinations. There was some question, however, of whether improvement in score would be the result of greater

* At the University of California the Cancer Teaching Project, in which this study was conducted, is supported by a grant from the National Cancer Institute of the National Institutes of Health, United States Public Health Service.

The co-authors of the present article are members of the staff of the Cancer Research Institute, University of California Medical School, San Francisco. Leonard W. Towner, Jr. is assistant research oncologist, while David W. Galloway is statistician. Before coming to California, Dr. Towner had taught psychology at Drake University. His Ph.D. was obtained at the University of California, Berkeley, in 1948. Before assuming his present position three years ago, Mr. Galloway had served as chief of the Test Development Unit, U.S. Army Joint Board of Civil Service Examiners, Oakland Army Base. He earned his Master's degree at the University of California, Berkeley, in 1946.

learning of the subject matter of cancer or of *practice* in taking the "Cancer Knowledge Examination." A known number of items in each edition of the examination have been repeated every year; therefore, recognition of these particular items could have resulted in a spurious gain in score over and above that coming from increased knowledge of the subject matter itself.

The 1951 edition of the examination contained 115 items that had been used in previous editions in either identical or revised form. Of these 115 repeated items, 60 had been used in both 1949 and 1950, 26 had been used in 1950 but not in 1949, and 29 had been used in 1949 but not in 1950. The remaining 35 items in the 1951 test were completely new. Inasmuch as recognition of these items could systematically bias the apparent improvement in test scores, it was deemed necessary to ascertain the extent of this contamination.

The Method

The study reported here had two specific purposes: first, to discover whether the students recognized the old items in the test, and second, to see whether recognition of these items influenced students' scores after repeated use of the test. Two null hypotheses were proposed for testing:

1. Medical students who have been repeatedly examined on the subject matter of cancer using similar examinations are unable to differentiate between old and new items in those examinations.
2. There is no relationship between the number of old items in the "Cancer Knowledge Examination" which a student recognizes and the amount of improvement in score he shows during repeated testing.

The experiment was performed on the Class of 1952 of the University of California School of Medicine in April, 1951, while these students were still juniors. These students had taken the test as freshmen in 1949 and each year thereafter.

Immediately following the test administration in 1951, while they were still in the examination room, these students were quizzed on their memory for the items in the examination. A check list for items 36 through 100 in the 150-items examination was given each student. With the examination booklet in front of him for reference the student checked whether he believed each of these sixty-five items was new in 1951 or had been used previously, and, if used before, whether the previous use was in 1949, 1950, or both of these years. A total of forty-nine students returned check lists free of any contradictory responses (e.g. new in 1951 and used in 1949).

Among the sixty-five items on the check list were twenty-two items which had been repeated in unchanged form for three years, ten items used both in 1950 and 1951 with no revisions, thirteen items used in 1949 and 1951 with no revisions, and eleven items completely new in

1951. The remaining nine items were major revisions of previous items and were excluded from the statistical analysis.

The fifty-six items described above and used in the analysis were divided into four groups: those used previously in 1949 and 1950, those used in 1949 but not in 1950, those used in 1950 but not in 1949, and those completely new in 1951. The number of students thinking each of these items was new in 1951 was ascertained. Rejection of the first null hypothesis rests on the fact that if recognition of repeated items exists, fewer students will call these items "new" than is the case with the truly new items.

Results of the Test of Recognition

Analysis of variance was used to test the hypothesis that no difference in number of students thinking the items were new existed among the four types of items. The results of this analysis are shown in Table I.

Table I

Results of the Analysis of Variance for Testing the Significance of the Differences in Number of Students Believing Items were New Among Four Groups of Items in 1951 Cancer Achievement Examination for Medical Students.

Source of Variation	Sum of Squares	d.f.	Variance	F
Total	4,370	55	——	
Between Groups of Items	1,141	3	380.2	6.12
Within Groups of Items	3,229	52	62.1	

With 3 and 52 degrees of freedom an $F = 4.20$ is needed at $P = .01$. The obtained F exceeds this, and the null hypothesis must be rejected. Therefore, it is to be concluded that there are significant differences among the mean numbers of students believing the four types of items were new.

The next step was to determine where the significance lay among the four groups of items. The mean number of students checking items of each type as new is given in Table II.

Table II

Mean Number of Students Believing Each of Several Groups of Items in 1951 "Cancer Knowledge Examination" Were New Items

	TYPE OF ITEM			
	Used 1949, 1950 & 1951	Used 1950 & 1951	Used 1949 & 1951	New in 1951
Number of Items	22	10	13	11
Mean Number Students Believing Items New	29.36	32.70	29.54	41.09

In order to determine the significance of the difference between means, "t" was used and the results are shown in Table III. In reading this table the value 11.73, for example, given in the first column of figures in the table is the difference between the means used 1949, 1950, and 1951 and items new in 1951.

Table III

Results of Test of Significance of Differences in Mean Numbers of Students Believing Four Types of Items in 1951 "Cancer Knowledge Examination" Were New

Type of Item		Used 1949 1950 & 1951	Used 1950 & 1951	Used 1949 & 1951
New 1951	Mean diff.	11.73	8.39	11.55
	t	4.59**	2.54*	3.54**
	d.f.	31	19	22
Used 1949, 1951	Mean diff.	0.18	3.16	
	t	0.06	0.86	
	d.f.	33	21	
Used 1950, 1951	Mean diff.	3.34		
	t	1.09		
	df.	30		

* significant at P = .02

** significant at P = .01

None of the differences among the groups of old items approaches significance, but every one of the groups of old items differs significantly from the group of new items in the mean number of students believing the items were new. Therefore, we must reject the first null hypothesis that students cannot differentiate new and old items.

Apparently these students were able to recognize whether items were new or old, but unable to differentiate between old items used with different frequencies or between previously used items of different ages. This could mean that the students were able to recognize but not recall the test items.

Results — Recognition vs. Improvement

Since the students tend to remember items used previously, the problem arises as to whether this memory is of any importance in improving their scores during repeated administrations of the test. Students with the greatest recognition of old items presumably would gain the most with repeated testing if memory for items has any bearing on improvement. Therefore, the improvement in score on the twenty-two items repeated all three years was determined for each of the 49 students, and the number of these items recognized by the student as being old in 1951 was found. The product-moment correlation between improvement in score on these old items and number of old items recognized is –.029!

This correlation between improvement and memory might be spuriously low if students with high scores as freshmen in 1949 were near the ceiling of the test (with little room for improvement) and also posessed the best memory for previously used items. Therefore, the correlation between freshman score and memory for the items was computed. The obtained coefficient of –.038 indicates, however, that the differences among the students' scores in the freshman year were unrelated to their memory for those items. As a further verification the gains in score from 1949 to 1951 were corrected to eliminate the effect of differences in freshman score by using the regression of gain in score on freshman score. These corrected improvement scores correlated –.015 with the memory scores. Thus, there is no necessity to correct the improvement scores before relating them to the memory scores, and the correlation of –.029 between memory and improvement may be assumed to be unaffected by differences in freshman scores.

In conclusion, the second null hypothesis has been substantiated. That is, this study offers no evidence that a relationship exists between recognition of items and improvement in score.

Summary

1. Medical students throughout the country have been tested for their knowledge of cancer each year since 1949 using a multiple-choice examination.

2. Many of the items in three forms of the examination have been repeated every year.

3. A question arises as to students' recognition of old items and the influence of this recognition on their scores.

4. The Junior Class at the University of California School of Medicine was tested in the Spring of 1951 to determine their recognition of some of the old items in the 1951 "Cancer Knowledge Examination" and the relationship of this recognition to their improvement in score since the freshman year.

5. Analysis of variance reveals that these students checked the old items in the 1951 test as being new significantly less than they so checked the new items.

6. Older repeated items were thought to be new no less often than the more recently repeated items.

7. Frequently repeated items were thought to be new no less often than infrequently repeated items.

8. There is no significant correlation between the number of old items a student correctly recognizes and the improvement in his score during three administrations of the examination.

Conclusions

Some of the limitations of this study must be kept in mind. First of all, these items cover material most of which has been presented to these students in their medical training and which, therefore, is not new or novel. This failure of the concepts tested to stand out from the background of all the students' acquired knowledge may decrease the recognition of specific items.

Secondly, the examination is administered to these students during a two-hour period once each year. Since the students see the examination at no other time, extensive study of the examination is impossible.

Thirdly, the students are never told which specific items they fail or pass—they have no "knowledge of results," although their instructors are told in which topics the students are weak or strong. Thus, the students may recognize items without ever knowing the correct answers.

Therefore, if the results for this group are at all typical, students' recognition of old items in a revised examination bears little relationship to the gains in score shown with repeated use of the examination.

In addition, recognizing the limitation of this investigation, we may conclude that exposure to course material through the medium of an examination does not in itself affect the relative degree to which different topics are learned.

(Continued on Page 83)

Educational Sociology As a Factor In Developing Teaching Competence

R. P. WHITFIELD
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FOR SEVERAL years the Stanford University School of Education has been carrying on research to determine how professional education courses may be made more functional in developing teaching competence. The study reported in this article deals with one phase of this research program. Subsequent articles will consider the values of educational sociology in the teacher training program and the vitalization of teaching methods at the college level.

While many courses in educational sociology have been offered during the past half century, an examination of their purposes reveals that they have been devoted almost entirely to developing such understandings as "a philosophy of education," "the meaning of democracy," and "the importance of social problems," or to changing certain social attitudes. Any investigation of whether or not educational sociology could develop specific teaching competences has been largely neglected. Thus, the present study reports the results of a course in educational sociology taught with a new emphasis.

Purpose of the Study

The purpose of this study was to ascertain the teaching competences which might be developed by the introductory educational sociology course at Stanford University, and the experiences which should be provided in order to develop these competences. Under this general purpose, the study dealt with the following sub-problems: (1) What specific goals, in terms of teaching competence, could be valid for educational sociology? (2) With what experiences might teacher trainees be provided to develop these competences? (3) How effective are these experiences in developing the identified competences?

The chief focus of the study was limited to the ninety-one students enrolled in the introductory educational sociology class during the spring

Raymond P. Whitfield is assistant professor of education at the Eastern Washington College of Education, Cheney. He had previously taught in the Menlo Park, California, Public Schools, and at the Menlo School and College. His Ed.D. was granted at Stanford University in 1950. The present article is a digest of his doctoral dissertation. Dr. Whitfield reports that he has continued his research, with excellent results, in his classes at Eastern Washington College of Education.

quarter of 1949. This class, consisting of two sophomores, twenty-four juniors, seventeen seniors, and forty-eight graduate students, fairly represented the personnel ordinarily found in a beginning course in educational sociology at Stanford.

Procedure

The introductory educational sociology course at Stanford was utilized experimentally in conducting the study. Steps followed in the evaluative procedure were: (1) determining goals for the course; (2) stating the goals in behavioral terms; (3) providing experiences through which evidence on achievement of these goals might be gathered; (4) developing methods for recording the evidence; (5) reviewing the results in the light of the established goals.

Sources for the goals were the "Factors in Teaching Competence"* developed by the California Council on Teacher Education, and the literature from the field of educational sociology. Tentative goals were reviewed and validated by a panel of professors from the Stanford University School of Education. These goals were grouped under five headings describing in behavorial terms the competences students were to achieve: (1) demonstrates ability to plan cooperatively with students; (2) demonstrates competence in organizing and using collateral literature; (3) uses community resources effectively; (4) defines key social problems and the role of the school in their solution; and (5) adapts school practices to the child's social background.

Experiences providing opportunities for students to progress toward the goals of the course included:

1. Writing a pre-test which was designed to appraise students' abilities to analyze social problems.
2. Participating in a small (six to nine person) research-discussion group.
3. Surveying the local community in connection with the social problem chosen by the group.
4. Writing individually a mid-term report discussing:
   a. an interview with a resource person in connection with the group project.
   b. a journal article on the use of community resources in the school.
   c. a book providing background information for the group project.
5. Presenting a group oral report of the group's findings to the class.
6. Writing a final individual examination covering lectures, reports, and basic reading materials.
7. Writing a final group report defining and analyzing the social problem investigated by the group and emphasizing the implications for education.
8. Being interviewed by the researcher concerning the value of various course activities.

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* *The Program of Elementary Teacher Education in California.* Sacramento: Calif. State Dept. of Educ. Bulletin Vol. XX, No. 3, April 1951. pp. 114-119.

9. Taking pre-tests and post-tests outlining the meanings attached to "Democracy" and attitudes on "Minority Group Relations."
10. Reading background materials pertinent to the group problem, and general materials required of the entire class.
11. Listening to lectures and reports.

Measuring Competence

The achievement of competences was demonstrated on various levels. At the *performance* level, competence was judged directly from observation of student behavior; at the *planning* level, competence was judged by the students' ability to formulate procedures for educational action; at the *theoretical* level, competence was judged by the extent to which students understood social data and problems of significance to the educator.

The following instruments were devised to evaluate the course in terms of its stated goals: (1) group observation reports; (2) attitudes test on democracy and minority group relations; (3) social distance test; (4) pre-test on definition of social problems; (5) individually written mid-term reports; (6) final examination; (7) student evaluation of the course; (8) written group project reports; and (9) written records of student interviews.

Conclusions

Data gathered through the various instruments showed that the goals established were feasible. The behavioral definitions of each competence as listed in the original objectives for the course were used as criteria for judging achievement. The chief findings of the study, as related to major goals, were as follows:

1. Demonstrates ability to plan co-operatively with students.
   a. Group members showed increasing ability at the performance level to plan cooperatively together.
   b. Group leaders showed no appreciable development at the performance level to conduct group discussions successfully.
   c. At the theoretical level:
      1. Attitudes toward the use of group methods changed sharply in the direction of greater acceptance.
      2. Undecided and non-acceptive attitudes toward minorities became more clearly structured and more liberal.
      3. Undecided and conservative interpretations of democracy became more clearly structured and more liberal.
2. Demonstrates competence in organizing and using collateral literature.
   a. In group work, students achieved a high degree of competence at the performance level.
   b. In individual work, about half the students exhibited this competence at the performance level.

3. Uses community resources effectively.
   a. Students achieved distinct competence in planning community surveys, but not in planning the use of these resources in the classroom.
   b. Students achieved competence in planning the use of resource personnel.
   c. Students achieved competence at the planning level in interview techniques.
4. Defines key social problems and the role of the school in their solution.
   a. In groups, students demonstrated practical competence to define the social problems dealt with in the group project.
   b. As individuals, students achieved satisfactory competence at the planning level.
5. Adapts school practices to the child's social background.
   a. Students achieved competence at the theoretical level in explaining how general school functions might be adapted to the child's social background.
   b. Students showed a wide range of ability at the theoretical level in suggesting how classroom practices might be adapted to the child's social background.

Implications of the Study

This experimental course was generally successful in developing teaching competences. However, a consideration of the findings reveals a need for some modifications. First, more attention should be given to the development of group leadership skill. Students in general are accustomed to accepting knowledge increments as a valid goal for college courses; as future teachers they need to accept the value of group leadership skill as a goal. Second, the goal "Demonstrates competence in organizing and using collateral literature" should be expanded to include the use of resource literature from the community. More attention should also be given to developing skill in the use of professional journals. Third, the enthusiastic acceptance by students of the group project dealing with one live community social problem, and the general success of this experience in developing needed teaching competences, indicate the basic psychological superiority of this approach. Contrasted to the course which requires extensive reading on many hypothetical social problems, this course developed competences by directly involving students in the actual social problems of a specific community. Teacher trainees who as students have been involved in the solution of concrete social problems are relatively likely to assume their social responsibilities as teacher-citizens.

For the field of educational sociology this study implies that courses may be made practical in teacher training by emphasizing the development of teaching competences. Such competences were successfully developed by providing opportunities for students to participate directly in the social problems of a community.

What Should Be Taught in High School ?

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SINCE the establishment of formal schooling, educators have faced the problem of deciding what should be taught in school.

It is doubtful that a curriculum could prove to be a beneficial educational experience and source of knowledge if it did not consider the curriculum preferences of both pupils and parents as well as those of the professional educators.

Survey Technique

The study here reported was made in a fairly large rural high school. About a thousand student responses were tabulated. Over 250 parents of these students responded to the same check list used by the students.

This check list represented 220 items chosen equally from eleven areas of the high school curriculum. These items were chosen at random from a list of over a thousand items selected from textbooks, courses of study, and syllabi used by high school teachers.

The students were asked to check the items they would like to be taught in high school. The parents were asked to check the list in terms of what they would like their son or daughter to be taught. Both students and parents were also asked to rate the importance of the selected terms as being either very important or fairly important.

The responses of the students were tabulated by sex and by the grade level that they represented. The parents' responses were tabulated in terms of their being a mother of a boy, father of a boy, mother of a girl, or father of a girl. By tabulating the responses in this manner, it was possible to make a more detailed comparison of parent reactions.

Findings

The findings from this study disclosed some interesting facts. The responses of the boys showed that industrial arts was liked the most and that art was liked the least. The subject areas, ranked in order of preference by the boys, were found to be: industrial arts, social science, health and recreation, business, science, home economics, English, mathematics, foreign language, music, and art.

When the findings for all the boys were combined, it was impossible to see any difference between the preferences of the boys at different grade levels. A further break-down of the boys' preferences disclosed that

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the freshmen boys disliked more items than they liked, and that the seniors liked more items than they disliked. If students checked an item to indicate that it should be taught in high school, it was tabulated as "liked." If the student did not want a certain item included in the curriculum, it was tabulated as "disliked." It was found that senior boys liked more topics than junior boys who in turn liked more items than sophomore boys and so on down the line.

The rank order of the importance ratings the boys gave the subject areas was not the same as their preference ratings. They ranked industrial arts first in preference, but ranked social science first in terms of importance.

The responses of the girls indicated that they liked home economics best and science the least. The subject areas, as listed by girls, are shown in the following rank order: home economics, health and recreation, social science, English, business, art, music, mathematics, industrial arts, foreign language, and science.

There was little difference in the rank order of the preferences of the girls at different grade levels. The importance rating that the girls gave the subject areas also varied somewhat from their preference ratings. They preferred health and recreation to the social sciences, but rated the latter more important.

In interpreting the following data, it should be remembered that each parent responding was asked to check the topics in terms of what he or she would like his son or daughter to be taught in high school.

Parents of boys preferred the subject areas in the following order: health and recreation, mathematics, social science, industrial arts, business, English, home economics, science, music, art, and foreign language. There was considerable difference between what mothers and fathers wanted their sons taught. Mothers rated the area of health and recreation as first, while the fathers rated mathematics first. Mothers, on the other hand, rated mathematics fourth in preference. They rated health and recreation, industrial arts, and social science higher in preference than they rated mathematics.

A significant difference was also found between the parents' responses in terms of what they wanted their daughters taught. The subject areas were rated in the following rank order: health and recreation, home economics, social science, English, business, mathematics, art, science, music, industrial arts, and foreign language. Again, mothers and fathers disagreed on the ranking of mathematics. The fathers rated mathematics third in importance, while the mothers rated this same area sixth in importance. There was, however, more agreement between parents as to what girls should be taught than there was as to what boys should be taught.

In comparing the importance ratings parents gave to the subject areas, it was found there was no significant difference in terms of what their sons should be taught. In rating the importance of the subject areas in terms of what their daughters should be taught, the greatest difference was in the area of foreign language. Here the fathers rated the area seventh in rank order, and the mothers rated this same area tenth.

When the preferences of parents were compared with the preferences of the students, a considerable difference was found to exist. The greatest difference was found in the area of mathematics. Parents rated this area much higher than did sons and daughters. A similar difference was found when the importance ratings of students and parents were compared.

A detailed analysis of each of the two hundred and twenty topics was made, but space does not permit a discussion of all of the responses. The findings did indicate that boys and girls might rate the same subject high in preference and importance, but might show a considerable difference with respect to their preference for topics within this area.

Value of Study

This study might have value for the following persons:

1. the administrator, making use of parent reaction, might well consider whether these opinions come from a father or mother, and whether the parents were expressing themselves in terms of what a boy or girl should be taught;
2. an educator interested primarily in the guidance of secondary students could make use of the student preference and importance ratings;
3. the classroom teacher might be interested in the topic preferences within a subject area. Teachers should attempt, so far as possible, to present classroom materials and experiences in coeducational subjects, such as English and social science, that appeal to the interests of both boys and girls. These materials and experiences should not only include interests that are common to both boys and girls but should also include interests that are primarily either boy or girl interests. If this is done, the classroom instruction might then be better adapted to the individual differences of the students, since the core of the instruction could be designed to suit both boys and girls. The remainder of the instruction could be especially adapted to one sex or the other.

Further Research Needed

Further research should be made in the area of curriculum and subject area preferences. A similar study should be repeated in some urban high schools and in other rural high schools. A longitudinal study should be made and the results compared with a cross sectional study. Future curriculum preference check lists should attempt to consider the effect of emotionally charged words appearing in the check list topics. Research studies measuring the curriculum preferences of high school students should use a stratified sample in obtaining pupil preferences. The findings and recommendations from such researches would aid in the construction and revision of secondary school curricula.

The Value of a Personality Inventory In a Self-Appraisal Course On the Secondary School Level

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PROBABLY no subject in the secondary school program in Chicago provides more of an opportunity for the integration and the development of the adolescent personality than does the *Self-Appraisal and Careers* course; and one will find few high school districts where there is more need for the understanding of those factors that tend to bring forth normal development than in the Wells High community. The principal aim of the *Self-Appraisal and Careers* course, as taught by the writer, has been to awaken in the individual a realization of the "self" as a product of his heredity and environment.

Through a study of behavior based on the understanding of the psychology of individual differences, and through a study of the effective environment of the individual, the pupil is taught to develop techniques of self-guidance and self-criticism so that he may try to evaluate and develop his own personality and more wisely choose an occupational area of work for future consideration.

In order that the student may be guided in his study of his interests, abilities, aptitudes, and personality traits, he undergoes a fairly comprehensive testing program.

One instrument of evaluation the writer uses is a personality inventory. There appears to be no available literature on the values to the student in a secondary school of an analysis of such an instrument. It is a known fact that there have been gross misinterpretations of many standardized personality schedules in higher education. After taking such a test, dozens of students have been confused and have worried a great deal about the results. But it is the writer's contention that if the teacher is adequately trained in the *uses of such an instrument in the situation involved*, and if his presentation is carefully planned, he may make the personality schedule an aid to the student in self-appraisal and an invaluable guidance technique for the home-room teacher, the class teacher, and the adjustment office.

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It is the aim of the writer to describe here the use of a personality inventory in self-appraisal and careers classes by a presentation of excerpts from the written analysis of the students after the administration of the *California Test of Personality*.

Background

The Community

The Wells High District—a district of many nationality groups—is primarily an industrial center; numerous factories of various industries are concentrated in the area. There are also many retail establishments which supply the needs of the workers and the residents. The labor supply for both the industrial concerns and the stores is drawn chiefly from the people living in the community.

The School

Wells High, a school whose curriculum is patterned chiefly around a philosophy of general education, has an enrollment of approximately 2000 students. The membership consists principally of Polish, Italian, and Negro boys and girls.

The Students

Self-Appraisal and Careers is an elective course offered to third and fourth year students. They exhibit a wide range of differences in interests, abilities, and in social and emotional development.

Procedures

Following the learning experience on "Development of My Personality," the students are told that one method that may be used to help them evaluate their personality is to take and interpret a personality inventory. The instructor allots a great deal of time to class discussion explaining how a personality inventory is very much like the interest inventory they took earlier in the course, in the sense that there are no right or wrong answers. The class is further instructed on the interpretation of the inventory. They are told that their percentile ranking on the components of the personality test is based on average random groups, and that the results may reveal and clarify some of the phenomena they learned about in their Personality Unit (e.g., how we adjust to frustration, the significance of emotions in our behavior, the importance of mental hygiene in our daily life, and the relationship of certain personality components to career selection). Following the administration, scoring, and interpretation of the test, and after the students have made their "profiles" they are asked to analyze their self and social adjustment pattern.

The following excerpts are representative samples taken directly from student analyses of *The California Test of Personality**, interspersed with comments by the writer. No attempt has been made to correct errors in grammar, usage, or spelling.

Susan P. and Olga P. believe they have profited from taking a personality inventory. One writes—

> "By taking the *California Test of Personality* I have learned quite a few things. In *self reliance* my score was high and would tell anyone that I did and can do things independently. In other words I don't depend on other people to do things for me. In *personal worth* I came in high, my score was seventy and makes me feel that I have accomplished something in life to know that I am well regarded by others."

The other says,

> "From taking this test I have found out quite a few things about myself. In *self reliance* I have a very low score which means I will have to improve myself by learning to do things by myself rather than having someone else do them for me."

The concept of "norms" and the influence of the environment on personality development is explained by Martha A. She says:

> "This test was to test your personality in order to show you where you stand with another person. My average percentile rank was about sixty-five. I believe that if I would practice more worthwhile habits I would improve my personality."

When Leonard S. writes in regard to his low score on anti-social tendencies—

> "I do these things but mostly because the guys I go around with do the same things. Although I don't enjoy doing these things I always try to control my temper, and when I do any quarreling its usually just to keep up a conversation."

—it reveals real insight into adolescent problems. Teachers and administrators might change their interpretations of Leonard's behavior if they could read his quotation.

Mary Z's candiness and sensitiveness is perhaps explained in the following excerpts:

> "Lots of times we are discussing things and we don't have the same opinion. I always give in, so that there will be no disappointment. There is one habit that I will have to break. I have a habit of disliking a person just because my friends don't like them and when I break this habit I'll have control of my social skill. "Symptoms" I scored 11, and at times I do have the symptoms of nervousness, but not often."

She further writes:

> "I scored low in "School Relations" maybe because I feel that my teachers don't like me."

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* By E. W. Tiegs, W. W. Clark, and L. Thorpe; published by California Test Bureau, Los Angeles, California.

John B., on the other hand, finds that he is well adjusted to his school:

"I feel I am pretty well liked by teachers and I enjoy being with other students. I got seventy for this test."

From Ivery M. we learn about the mechanism of "bullying" She tells us that—

"I don't like to bully but sometimes it is necessary to bully to show who's boss."

In discussing personal freedom, Juanita H. looks at the problem objectively:

"I have enough freedom sometimes I think that I have too much."

Robert M. realizes that a percentile rank of twenty calls for improvement. He says,

"Social Skills—On this test I had the lowest score of all my tests. I had a score of 10 for a percentile rank of 20. I know that this is below average and I should improve. I guess that I must learn to like people much more than I do. But there are people that you can never like. I also need to be more diplomatic with my friends as well as strangers than I am right now."

Roy F. explains the function of a personality schedule:

"This test unlike the aptitude test is to see how we act, think, and behave in certain places at certain times. The answers to the questions asked on this test are based on what the average person would think or do."

In discussing Personal Worth, Pat N. writes:

"But as far as sense of Personal Worth, I believe I have a slight Inferiority Complex. I often feel that I am not liked by my friends, and a great deal of things annoy me."

Conclusions

Space does not permit the inclusion of more illustrative cases. The writer hopes that the above excerpts of student analyses of several aspects of a personality inventory represent a positive indication of the value of such an instrument in a secondary school. It cannot be emphasized enough that the student's attitude and orientation to the instrument must be that of an individual taking an achievement or a vocational test, where the student interprets his results by determining his relative position among the members of a *representative* group. Unfortunately the popular concept of a personality schedule as being an instrument for measurement of psychiatric or severe maladjusted behavior is still prevalent among sundry teachers and administrators.

It has been the writer's experience over a number of years in teaching *Self-Appraisal and Careers* that a personality schedule or test has its place not only as an aid in the evaluation of the total individual, but also serves as a strong motivating class activity. As an aid in occupational selection, the measurement and appraisal of certain personality components or complexes increase in importance. Finally, for the fullest utilization of the inventory, the student should be guided through a detailed analysis of its findings.

Teacher Personnel Research*
II. Investigation of Teacher Characteristics

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IN A preceding discussion ("Teacher Personnel Research: I. Considerations Relative to Research Design." *California Journal of Educational Research,* January, 1953, 4: 19-27.), it was noted that the understanding of teacher competency is essentially a matter of determining the relationship between (a) observable teacher behaviors, and (b) changes in pupil behavior produced by teacher behaviors. It also was observed that a necessary first step toward such understanding is the identification of observable teacher behaviors and the development of means of reliably and validly measuring them. A certain amount of research in these directions is presently under way and it appears that considerable progress is being made.

The data that are accumulating from such research may be of relatively little *immediate* help in describing the hypothetical effective teacher, but they *are* suggesting possible answers to questions that must logically precede that all-important one, "What are competent teachers like?" Present research is contributing to our understanding of ways of measuring various proximate criteria of teacher effectiveness, (i.e., teacher behaviors) and to our knowledge of the complex methodology involved in the assessment of human behavior. It is making possible a better understanding of how certain teacher characteristics and behaviors are related. And it is suggesting predictors of certain of the patterns of teacher behavior. All of these are important concerns in laying the foundations for fundamental research on teacher effectiveness.

Dimensions of Teacher Behavior: A Factual Approach

Much of the research directed at the understanding of teacher characteristics intentionally sets aside, for the time being, the value-judgment

* This is the second and concluding article on *Teacher Personnel Research.* The first appeared in the January issue of this Journal.

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approach, *i.e.*, considerations of effectiveness or ineffectiveness of particular behaviors of teachers. Rather, attention is centered in the investigation of possible *teacher behavior dimensions.* Such so-called dimensions are abstractions which define teacher behavior variables in terms of clusters of relatively homogeneous behaviors at the extreme poles of such an hypothesized variable.

It is implied in this approach that a teacher can be described in terms of a position on a particular behavior dimension, such description being completely objective and factual in nature, rather than involving a judgement of relative effectiveness. As the logician points out, *facts are neither good nor bad per se* — they simply *are.* This approach, therefore, attempts only to describe a teacher *factually* with regard to various dimensions of teacher behavior, *without* making any value judgment of goodness or poorness of such behavior. Thus, the teacher who enters freely into pupil activities, who actively engages in exchanging ideas with pupils, who encourages pupil decision, and who tends to "put pupils on their own," probably would be described by a position near the democratic pole of an autocratic-democratic behavior dimension. But in so describing the teacher, no judgment of effectiveness or ineffectiveness of teaching would be implied. The description would be purely factual.

In attempting to better understand the characteristics of teachers and the dimensions such characteristics comprise, several carefully planned research programs have been instituted during the past few years. One of these, that conducted by McCall (2) in North Carolina, has sought information about the relationships between certain teacher characteristics and composite pupil change (derived from measures of a variety of pupil behaviors). A New York State Study, seeking to determine student characteristics related to success in the teacher training program, is being carried out by the State Education Department in cooperation with a number of New York colleges and universities.

The Teacher Characteristics Study

One of the most extensive of these major research programs is that conducted by the Teacher Characteristics Study — a project, embracing a number of related researches, which has been in progress for the past four years under the auspices of the American Council on Education and The Grant Foundation.

The work of the Teacher Characteristics Study has been guided by two principal objectives:

1. The identification and analysis of patterns of teacher behavior. With the intention of better understanding the organization of teacher behavior, answers to such questions as the following have been sought: Do teacher behaviors fall into discernible patterns? What is the nature of such patterns? Are different patterns characteristic of different groups of teachers?

2. The development of materials useful for the prediction of teacher behavior. On the assumption that characteristic patterns of teacher behavior are identifiable, a second objective of study has been the development of materials for estimating the likelihood that a given teacher will demonstrate a particular pattern of teaching behavior.

In working toward the attainment of these objectives a number of researches have been designed and conducted. Many of these have been completed, but others are still in progress, and, in view of the longitudinal nature of certain aspects of the problem, may continue for a number of years if means of financing can be found. The researches of the Teacher Characteristics Study fall into two general categories, *descriptive* and *methodological.*

Included among the *descriptive studies* are: (a) those dealing with the identification of dimensions of teacher behavior (dimensions of observable classroom behaviors, attitude dimensions, and viewpoint dimensions); (b) those having to do with the conditions associated with descriptions of teacher behavior; (c) those making comparisons of different dimensional patterns of homogeneous teacher groups; and (d) those describing changes in teacher behavior over periods of time. Such studies all are concerned with the definition, nature, and organization of teacher behaviors.

The *methodological researches* have been devoted to the study of such problems as: (a) techniques for obtaining information relative to teacher behavior, *e.g.*, critical incident techniques, observation methods, self-report techniques, etc.; (b) techniques for the analysis of information relative to teacher characteristics, *e.g.*, comparison of techniques for weighting criterion data, comparison of techniques for determining the validity of predictors of behavior dimensions, and comparison of techniques for weighting predictor materials; and (c) development of various kinds of predictor materials for identifying teacher characteristics.

The findings of a sampling of these Teacher Characteristics Study researches will be briefly reviewed.

Critical Incidents and Teacher Behavior

One preliminary and important research (1) conducted by the Teacher Characteristics Study has had to do with the determination of "critical incidents" or critical behaviors of teachers, such incidents being submitted by persons closely associated with teaching on the basis of first-hand knowledge. Although value judgments are required in connection with a critical incidents approach, this technique *does* represent an effort to *determine the bases of such judgments and to objectify descriptions of teacher behavior.*

The procedure followed in the study of critical behaviors of teachers consisted of collecting analytical reports of especially effective or ineffective classroom behaviors of *unnamed* teachers from individuals who were closely

associated and well acquainted with the teaching process, *i.e.*, supervisors, training teachers, principals, teachers, student (practice) teachers, and students in "methods" courses. Each participant in the study was asked to think of a particularly effective or ineffective teacher he had known; then, to recall and describe some actual behavior of that teacher that contributed to the teacher's effectiveness or ineffectiveness. A "critical incident" was defined as any observable teacher behavior or activity which might make the difference between success and failure in teaching. The approach intentionally omitted those aspects of teaching that seemed to be carried out in an acceptable manner by practically all teachers. It included only those behaviors that appeared to differentiate between extreme groups.

The reported critical behaviors of teachers were classified into homogeneous sets of groups, from which the following generalized descriptive statements were derived.

EFFECTIVE BEHAVIORS	INEFFECTIVE BEHAVIORS
1. Is alert, appears enthusiastic and interested in pupils and classroom activities.	1. Is apathetic, dull, appears bored and uninterested in pupils and classroom activities.
2. Is cheerful, optimistic, commending.	2. Is depressed, pessimistic, disapproving, fault-finding, appears unhappy.
3. Exhibits self-control, not easily disturbed, well-organized.	3. Loses temper, is disorganized, is easily disturbed in face of classroom demands.
4. Likes fun, posesses a sense of humor.	4. Is serious, too occupied for fun or humor.
5. Recognizes and admits own mistakes.	5. Is unaware of or fails to admit own mistakes.
6. Is fair, impartial, and objective in treatment of pupils.	6. Is unfair or partial in dealing with pupils.
7. Is patient.	7. Is impatient.
8. Shows understanding and sympathy in working with pupils.	8. Is over-critical and suspicious.
9. Is friendly, democratic, and courteous in relations with pupils.	9. Makes threats, uses sarcastic remarks, or in other ways shows lack of sympathy.
10. Helps individuals with personal as well as educational problems.	10. Is tense, authoritarian, and antagonistic in relations with pupils.
11. Commends effort and gives generous praise for work well done.	11. Is unaware of pupils' personal needs.
12. Is able to anticipate reaction of others in social situations.	12. Fails to give approval and commendations for pupils' efforts and activities; is hyper-critical.
13. Encourages others to do their best.	13. Is unable to anticipate reactions of others.
14. Evidences a planned, but flexible procedure, anticipating individual needs.	14. Fails to encourage pupils to do best work.
15. Stimulates pupils through interesting and original materials and techniques.	15. Shows rigidity of procedure; fails to provide for individual variations.

16. Conducts well-planned, clear, practical demonstrations and explanations.
17. Is clear and thorough in giving directions.
18. Is skillful in encouraging pupils to work through their problems and evaluate their own work.
19. Disciplines in a quiet, dignified, positive, and fair manner.
20. Gives constructive help willingly and enthusiastically.
21. Foresees and resolves potential difficulties.

16. Uses uninteresting materials and poor teaching techniques.
17. Gives poorly-planned explanations.
18. Is unclear, vague, or incomplete in giving directions.
19. Fails to give pupils a chance to participate, or make choices, or evaluate own work.
20. Resorts to cruel, meaningless, forms of physical correction.
21. Fails to give help or gives it grudgingly.
22. Evidences inability to foresee and resolve potential problems.

This approach to the identification and description of certain teacher behaviors is basically more sound than the frequently employed procedure of asking educators what traits or qualities they believe teachers should possess.

Identifiable Areas of Teacher Behavior

One of the major interests of the Teacher Characteristics Study has been to seek to determine the kinds of patterns into which observable behaviors of elementary and secondary teachers fall. The answer was sought through the observation of teachers in their classrooms, the assessment of observed behaviors on a specially prepared Observation Blank, and the correlational analysis of the assessments of teacher behaviors.

Assessments of teacher behavior were made by selected observers who had been trained in making analytical observations. All assessments of teacher behavior were of a *purely factual nature.* They were *not* accomplished for the purpose of picking out "effective" or ineffective" teachers. The records submitted by the trained observers were intended to be objective estimates of specific teacher behaviors. Each teacher was observed on several different occasions and behaviors were noted with respect to some twenty-six different dimensions. Following combination of the assessments, the statistical relationships between the dimensions were analyzed. Analyses of the interrelationships of observed teacher behaviors were conducted at both the elementary and the secondary levels of teaching.

A factor analysis of the elementary teacher behaviors (4) resulted in five oblique (correlated) factors: (i) a factor referring to pupil participation and originality and open-mindedness on the part of the teacher; (ii) a factor referring to controlled pupil activity and "business-like" teacher behavior; (iii) a factor involving sympathetic understanding and fairness and composure on the part of the teacher; (iv) a factor relating

to teacher sociability, and (v) a factor relating to the outward appearance of the teacher.

The analysis of the secondary school teacher behaviors (6) resulted in six oblique factors (i) a factor relating to sociability and sympathetic understanding and fairness on the part of the teacher; (ii) a factor relating to responsibility and "business-like" behavior of the teacher; (iii) a factor contributed to principally by *pupil behaviors* and involving pupil participation and controlled pupil activity; (iv) a factor not clearly defined, but apparently reflecting reactiveness on the part of the teacher as opposed to calmness and composure; (v) a factor relating to originality and open-mindness on the part of the teacher; and (vi) a factor relating to the outward appearance of the teacher. Again, the intercorrelations between the factors were high and suggested that the number of factors describing the teacher behaviors could be reduced.

Although the elementary and secondary school factors do not duplicate each other entirely, they are generally similar and it is believed that three correlated factors may serve satisfactorily to describe teacher behaviors at both levels. These are: (I) a factor contributed to by understanding, friendliness, and responsiveness on the part of the teacher; (II) a factor contributed to by systematic and responsible teacher behavior; and (III) a factor contributed to by the teachers' stimulating and original behavior.

Correlated studies of these three factors show somewhat different relationships in elementary and secondary school situations. Factors I and III are most highly correlated in the elementary school, with factor II being relatively independent. However, with secondary school teachers, factors II and III are most highly related, factor I being relatively independent.

Still other researches of the Teacher Characteristics Study have been directed at the better understanding of teachers' attitudes and the educational viewpoints of teachers. The attitudes studies (8) were concerned primarily with the teachers' attitudes toward persons with whom they had frequent contact in the schools, such as fellow teachers, administrators, supervisors, pupils, parents, and non-teaching employees of the school system. Scales constructed for measuring teachers' attitudes toward these groups were used for several purposes: (a) for the study of the interrelationships of teachers' attitudes; (b) for study of the relationships between teachers' attitudes and other conditions such as experience and grade level taught; and (c) for study of relationships between teachers' verbalized attitudes and ratings (obtained by a unique mail-rating technique that maintained complete anonymity of the teacher) by their principal.

Results of three factor analyses indicated that teachers' attitudes toward persons contacted in the schools form three rather clearly defined

factors: (I) a factor related to teachers' attitudes toward pupils; (II) a factor related to teachers' attitudes toward administrators and supervisors; and (III) a factor related to teachers' attitudes toward other teachers and non-teaching employees of the schools. For practical purposes the last two named factors may be combined into a single dimension.

Elementary school teachers were found to be significantly more positive, or favorable, in their responses than secondary school teachers in several attitude areas and particularly on scales measuring attitude toward pupils. Attitudes appeared to be relatively unrelated to amount of teaching experience.

Summaries of teachers' educational viewpoints (or, the "philosophy" of the teacher) were obtained (3) through use of an *Educational Viewpoint Inquiry*, consisting of a number of items referring to matters of curriculum organization, pupil participation (in class planning and control), pupil achievement standards, teacher administrative responsibilities, and parent participation in the school program.*

Some Major Dimensions of Teacher Characteristics

Elementary Teacher Characteristics	*Secondary Teacher Characteristics*
TEACHER BEHAVIOR DIMENSIONS:	TEACHER BEHAVIOR DIMENSIONS:
1. (a) Understanding (b) Open-minded **vs.** (a) Unfriendly (b) Close-minded	1. Understanding **vs.** Unfriendly
2. Business-like **vs.** Disorganized; irresponsible	2. (a) Business-like (b) Open-minded **vs.** (a) Disorganized (b) Close-minded
TEACHER ATTITUDES:	TEACHER ATTITUDES:
3. Attitude toward pupils	3. Attitude toward pupils
4. Attitude toward other school personnel	4. Attitude toward other school personnel
TEACHER VIEWPOINTS:	TEACHER VIEWPOINTS:
5. Acceptance of subject-matter-centered view of the school's function **vs.** Rejection of subject-matter-centered view	5. Acceptance of subject-matter-centered view of the school's function **vs.** Rejection of subject-matter-centered view

* A forced-choice type of question was employed, permitting the respondents no middle-of-the-road answers. The following item illustrates those included in the *Inquiry*:

Do you believe that third grade children should

☐ be required to meet prescribed academic standards before beginning the work of the fourth grade?

☐ not be required to meet minimum standards of academic achievement before beginning fourth grade work?

Some Conditions Associated with Dimensions of Teacher Characteristics

A considerable amount of data is accumulating having to do with conditions associated with various descriptions of teachers on the dimensions of teacher characteristics noted above. It is gradually becoming possible to note trends for certain conditions (such as teaching experience, or marital status) to be associated with relative position on such dimensions as "business-like teacher behavior," or "positive attitude toward pupils."

Two points should be noted in this connection. *First*, it must be recalled that the position of a teacher near one of the poles of a teacher characteristic dimension provides a *factual description* and does *not* identify a teacher as "effective" or ineffective." *Second*, it should be noted that we are dealing with group data. Therefore, it is unlikely that any condition will be found to be extremely highly correlated with a characteristic dimension, *e.g.*, having attended a certain kind of teacher training institution might be significantly related to the dimension having to do with "understanding" teacher behavior, but this would not mean that fairly frequently occurring exceptions might not be observed. Some teachers who had attended that particular kind of a teacher training institution would not show "understanding" teacher behavior and some teachers who had not attended that kind of teacher training institution would, on the other hand, demonstrate such "understanding" behavior). The data can lead to certain generalizations, but never to complete answers for given individuals. Like the actuarial data upon which the conclusions and operations of life insurance companies are based, so must any conclusions in the area of teacher characteristics be interpreted in the light of probability.

In one investigation conducted by the Teacher Characteristics Study (5) an effort was made to determine to what extent such conditions as the following might be related to certain dimensions of elementary teacher behavior: (a) the particular school system in which a teacher was employed; (b) the social-economic status of the neighborhood in which the school was located; (c) the amount of college training of the teacher; (d) the amount of teaching experience; (e) the marital status of the teacher; (f) the teacher's score on a personality inventory—the *Thurstone Temperament Schedule*, yielding Active, Vigorous, Impulsive, Dominant, Stable, Sociable, and Reflective scores; and (g) the extent of teacher's agreement with his principal on responses to the *Educational Viewpoints Inquiry*.

Amount of teaching experience seemed to be a condition that was associated with several teacher characteristic dimensions. There was a tendency for teachers with from 5 to 9 years of teaching experience to be

described as showing behaviors toward the "understanding" pole of the *understanding, open-minded vs. unfriendly, close-minded* dimension of teacher behavior. There also was a tendency for at least three of the traits measured by the *Thurstone Temperament Schedule* to distinguish between criterion groups representing opposite poles of the teacher behavior dimensions. The Dominant, Sociable, and Impulsive scales seemed to be most discriminating*

Marital status, school system in which the teacher was employed, amount of college training, extent of agreement of the teacher's educational viewpoints with those of the principal, and other conditions studied, did not appear to be significantly related to the teacher behavior data in this particular investigation.

At least one of the findings of the study referred to in the preceding paragraph—that having to do with the marital status of the teacher—has been altered by the accumulation and analysis of additional data. There now seems some reason to believe that married elementary teachers, and married teachers of such subjects as mathematics and science in the secondary schools, are more likely to be described as "understanding" (and also more likely to be opposed to an academically-centered school approach) than teachers who have never been married. Interestingly enough the findings indicate that unmarried teachers of high school English, and social studies, tend to be described as "understanding" more frequently than married teachers of those subjects.

It is of some interest to note that there is a tendency for teachers who are trained in teachers colleges or state colleges to express viewpoints that are more subject-matter or academically-centered as compared with graduates of other kinds of institutions. At least, this seems true for elementary teachers. Elementary teachers who have attended large universities, on the other hand, tend to reject viewpoints which hold for subject-matter-centered teaching and emphasis on academic standards.

Needless to say, perhaps, the same condition or variable may be associated with teacher characteristic dimensions quite differently in different groups of teachers classified according to subject-matter taught, and the condition that is associated with a particular dimension for one teacher group, such as third and fourth grade elementary school teachers, may *not* be associated with that dimension when secondary teachers of

* It is important that the popular meaning of such terms as "dominant' *not* be applied here. Instead the terms should be thought of in light of the trait descriptions employed by Thurstone. *People scoring high on the Dominant* factor think of themselvees as leaders, capable of taking initiative and responsibility. They are not domineering. They enjoy public speaking, organizing social activities, promoting projects, and persuading others. *People scoring high on the Sociable* scale enjoy the company of others, make friends easily, and are sympathetic, cooperative, and agreeable in their relations with others. *People scoring high on the Impulsive* scale make decisions quickly, enjoy competition, and change easily from one task to another.

mathematics and science are considered. Actually there *is* considerable generality with regard to the conditions that apply to different teacher groups, but there are notable exceptions and the mistake must not be made of assuming that a condition associated with a teacher behavior dimension necessarily holds for all teacher groups in the schools.

This may be illustrated by the response of teachers to the question, "What persons have advised you that you would make a good teacher?" For secondary school teachers of mathematics and science, and English and social studies, it appears that such advice by members of the family of the teacher is associated with behavior describing the teachers as "understanding" and as "business-like." On the other hand, such advice from the teacher's family seems to have little relationship to teacher behavior variables so far as elementary teachers are concerned. Advice from counselors and friends of the teacher, however, *is* associated with the teacher attitudes and viewpoints of the elementary teacher group.

It is not possible to describe in detail the numerous and complex data of this sort that have been and are being accumulated by the Teacher Characteristics Study. The preceding examples serve merely as illustrations of kinds of information that may be related to teacher behavior and, in turn, to more ultimate criteria of teaching.

Implications

The sum total of the various descriptive and methodological studies in progress may reasonably be expected to lead to a more complete understanding of the characteristics of teachers and their identification.

From these and other research programs we are gathering fragments of information relative to the nature of teacher behavior, to ways of measuring teacher behaviors and characteristics, to relevant variables that must be controlled in investigations, and to techniques for the analysis of teacher characteristics data. Evidence is accumulating relative to the dimensions of teacher behavior, and occasionally suggestive findings concerning the relationship of some teacher behavior and pupil behavior are reported.

The question "What are the distinguishing characteristics of the competent teacher?" has not yet been answered. It probably is not answerable at the present time. But researches, such as those of the Teacher Characteristics Study, are assisting in the isolation and description of patterns of teacher behavior, a necessary first step before an answer can be obtained. And, in the meantime, teacher education is being provided with some basically important information useful in the development of courses and curricula, and educators concerned with in-service problems are being provided with insights that will contribute to their understanding of teacher behavior.

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One of the recent publications of the U. S. Office of Education will be of interest to those engaged in preparing teachers. Circular No. 351, prepared jointly by a member of the Office of Education staff, a member of the State Department of Education of Connecticut, and the executive secretary of the NEA's Commission on Teacher Education and Professional Standards, presents proposed minimum standards for approval of teacher preparing institutions. Seventeen principles and standards are discussed in the 25 page monograph. Included also are suggestions for the implementation of the standards.

(Continued from Page 61)

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Comparison of Words Used in Spelling Texts With Those Used by Children

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ALL TEACHERS are interested in helping children become better spellers. But a teacher is often baffled as he observes differences between the children's vocabulary, both oral and written, and the spelling text. Confusion may be due to two factors: (a) the meaningless way in which words are often taught in the classroom; and (b) the indcidence of seldom used words in the word lists found in the state textbooks. The study reported in this article relates to the second of these causes and more specifically, to the words on the fifth grade level in the *Word Mastery Speller*, newly adopted by the state and in use in our California classrooms.

The Study

The study was an attempt to discover the relationship of words used by fifth grade children in their written work in one Burlingame school and one San Jose school to the words presented in the fifth grade state speller. To add validity to the study, Betts' *Second Spelling Vocabulary Study*[1] was used as another check against the child-use words and the state speller list.

A total of 4,454 child-use words were tabulated from various types of writing over four months. The kinds of writing sampled were from personal letters, compositions, original stories, poems, social studies, and science. Words occurring in the first thousand of the Thorndike Word List[2] were eliminated in favor of a list of words which could be considered fifth grade words. From the original total of 4,454 child-use words, there remained 754 different words after the Thorndike first thousand words had been deleted.

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[1] Emmett A. Betts, *Second Spelling Vocabulary Study*. American Book Co., 1949.

[2] Edward L. Thorndike, *The Teacher's Word Book*. Teachers College, Columbia University, 1921.

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Findings

In Table I the child-use words are grouped on frequency levels. Four frequencies were used: Frequency Level I is the highest frequency and includes words used eight or more times by the children in their written work. Frequency Level II is a list of child-use words used five to seven times by the children in their written work. Frequency Level III lists words used two to four times by the children in their written work. Frequency Level IV lists words used once by the children in their written work. The child-use words on these frequency levels were checked against the state speller and the Betts' *Second Spelling Vocabulary Study*.

Table I

A Comparison Showing the Difference in Number and Per Cent Between the State Speller, the Betts' "Second Spelling Vocabulary Study," and Words Written by Fifth Grade Children.

Levels of Frequency of Child-Use Words in Written Work	Total Number of Child-Use Words in Written Work	State Speller and Betts' Study Compared With Child-Use Words	Child-Use Words Found in the State Speller and Betts' "Second Spelling Vocabulary Study"							
			Words at Fifth Grade Level		Words Above Fifth Grade Level		Words Below Fifth Grade Level		Words Not Listed in State Speller or Betts' Study	
			No.	Per Cent	No.	Per Cent	No.	Cent Per	No.	Per Cent
I	26	State Speller	5	19.2	6	23.1	13	50.0	2	7.7
Frequency: 8 plus		Betts	4	15.4	7	26.9	15	57.7	00	0.0
		Diff.	1	3.8	–1	3.8	–2	7.7	2	7.7
II	46	State Speller	10	21.7	9	19.6	13	28.3	14	30.4
Frequency: 5—7		Betts	12	26.1	12	26.1	15	32.6	7	15.2
		Diff.	–2	–4.4	–3	–6.5	–2	–4.3	7	15.2
III	190	State Speller	26	13.7	39	20.5	37	19.5	88	46.3
Frequency: 2—4		Betts	34	17.9	52	27.4	67	35.2	37	19.5
		Diff.	–8	–4.2	–13	–6.9	–30	57.7	51	26.8
IV	492	State Speller	65	13.2	97	19.7	71	14.4	259	52.6
Frequency: 1 only		Betts	78	15.9	168	34.1	111	22.5	135	27.4
		Diff.	–13	–2.7	–71	–14.4	–40	8.1	124	25.2
Totals	754	State Speller	106	14.0	151	20.1	134	17.8	363	48.1
		Betts	128	17.0	239	31.6	208	27.6	179	23.7
		Diff.	–22	–3.0	–88	–11.5	–74	–9.8	184	24.4

The Table shows the number and per cent of words above the Thorndike first thousand used by fifth grade children at grade level, below grade level, and above grade level, in comparison to their grade placement in the Betts' *Second Spelling Vocabulary Study* and the state speller.

The findings indicate small agreement between the child-use words and the state speller at grade level. The total agreement at fifth grade level was 14 per cent and the total agreement between the Betts' study and the child-use words at grade level only 17 per cent. This supports Hildreth's statement:

> "In writing, children are not so apt to use the words learned in formal spelling lessons as they are to use words of their ordinary conversation."[3]

The findings of the first three frequencies show high agreement between the child-use words, the state speller, and the Betts' study with words below the fifth grade level. This also is supported by related research. Hildreth in comparing word lists by Thorndike-Lorge, Horn, Betts, and Dolch to child-use words as compiled by Rinsland found the majority of words falling outside the words commonly used by children.[4]

In summarizing all four frequencies, there was a greater agreement between the words written by the children and the Betts' composite list than with the state speller. However, in both lists the majority of child-use words were found outside the grade level at which they had been placed. A total of 59.2 per cent of the child-use words were either above or below grade level. A total of 23.7 per cent of child-use words were not found in the Betts' study at all. With the *Word Mastery Speller* there was a total agreement between the state speller and the child-use words at the fifth grade level of 14 per cent. Forty-eight and one tenth per cent of the total child-use words were not listed by the state speller.

Implications

The results of this study tend to challenge the value of the spelling workbook, a text which dominates the spelling program in many schools today. In these schools, the teacher finds little time for teaching spelling after the daily lesson in the workbook is covered. Aside from a basic list of 2,000 to 3,000 words, children's vocabulary is very difficult to predict. Each child has his own vocabulary and, above a list of common words, it is hard to know what words to teach. A child-use word list along with a basic list would tend to give more meaning and significance to the spelling program. Spelling principles and habits can be mastered through teaching a basic list together with the child-use word list.

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[3] Gertrude Hildreth, *Learning the Three R's.* Educational Publishers, 1947. pp. 484–485.

[4] Gertrude Hildreth, "An Evaluation of Spelling Word Lists and Vocabulary Studies," *Elementary School Journal* 51:254–65, January, 1951.

Audio-Visual Materials and Learning Efficiency

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THE REPORTS of research designed to show to what extent the use of audio-visual materials promoted more efficient learning in our school programs were rather limited and inconclusive at the beginning of the 1950-1951 school year. As there was an almost universal clamor for more audio-visual materials and for more and more extensive use of these materials in our schools, it seemed that a study to learn more about the relation between the use of audio-visual materials and the consequent learning would be in order.

As used in this study the term "audio-visual" includes the special instructional materials such as films, film strips, slides, flat pictures, recordings and corresponding equipment commonly acquired by and utilized under the direction of an audio-visual department.

Plans for research work in this area were formulated during the Fourth California Audio-Visual and Curriculum Services Workshop held at Donner Summit, August 1950. These plans were modified in terms of prevailing conditions and used to guide some research work in Butte County during the school year. This report is concerned with two research projects in both of which the control-experimental method was used. The general purposes of the experiments were:

1. To study the effect of extensive use of audio-visual materials in the regular class program on the learning of pupils.
2. To compare the effect of audio-visual materials on the learning of superior and of lower ability pupils.
3. To check on the possibility of a saturation or point of diminishing returns in the use of audio-visual materials.

High School Project

The high school project was limited to two social studies classes of low ability pupils, one class with I.Q. average of 86, the other 87. Two units were selected, one on *Conservation* and one on *Health and Safety*, for which quantities of audio-visual materials were available.

The writer wishes to express appreciation to two of his colleagues who cooperated in the project on which this article is based: Oscar Fylling, Oroville High School, and Joseph McGie, principal of the Gridley Elementary School.

Dr. Loaz W. Johnson is director of education and curriculum coordinator in the Butte County, California, Schools, a position he has held for the past 12 years. He received his Ed.D. degree in 1938 at the University of California, Berkeley.

For the unit on *Conservation*, which came first, audio-visual materials were selected which covered somewhat the same areas as the outline usually followed by the teacher. These materials were presented to the experimental group practically every day, while only four films were shown to the other class.

No satisfactory tests for evaluating the learning on this unit could be found. A simple evaluation technique, which is probably considered unorthodox, was adopted. At the end of the experiment the students in both classes were asked to write papers telling what they had learned about five or six topics. These papers were mixed and given to three readers who had had experience in judging essay contests, with instructions to select the best twelve papers. The class which had the greater number of the twelve would be the winner. The teacher evolved this plan of evaluation in the belief that it would be a check on both the acquisition and retention of information.

For the unit on *Health and Safety* the classes were reversed. The procedures were the same as in the first unit except the *National Achievement Health Test was used*, in addition to the essay procedure, in the evaluation.

Results

In the unit on *Conservation*, eight of the twelve best papers selected were from the class which had audio-visual materials. In the unit on *Health and Safety* five of the twelve best papers selected were from the class which had audio-visual materials. On the standardized tests, the class with audio-visual materials made an average score of 58, while those without made an average of 57.

Conclusions

The data as gathered and evaluated favored neither the audio-visual nor non-audio-visual group in this experiment to any significant degree. According to teacher observation, the audio-visual materials stimulated more discussion and a better understanding of the information included in the unit. However, the teacher was uncertain about the point of diminishing returns.

Elementary School Project

The second experiment involved four eighth grade classes in an elementary school. Two of these were composed of pupils of superior ability and will be characterized as A and A-1 classes, and two were of lower ability and will be referred to as B and B-1 classes.

This experiment covered a period of almost eight months. During the first half, superior class A and lower ability class B had audio-visual materials, while classes A-1 and B-1 had none. During the second

half, classes A-1 and B-1 had audio visual materials, while classes A and B had none.

The experiment was limited to social studies, as one teacher had all the classes in this work and a large selection of audio-visual materials was available in this area. The unit was *American Democracy* which included American History, Geography, Civics, and the Constitution.

A supervising principal, who was on-the-job director of the experiment, the teacher, and the County Audio-Visual Director, carefully selected the audio-visual materials to correlate as far as possible with the unit outline commonly used in this school system. These materials included films, film strips, slides, flat pictures, and records.

The teacher and the principal previewed all audio-visual materials used in the classes. The lesson plans were developed in all four classes in terms of the audio-visual materials and the outline to be used in all classes. The most recently approved methods were used in presenting the audio-visual materials. An almost constant stream of audio-visual materials was poured into the experimental classes. Teacher presentation of materials, pupil reports, general discussion, and construction projects were used in the non-audio-visual classes.

Rather elaborate evaluation procedures were set up for this project. *California Mental Maturity, Progressive Achievement, National Achievement History and Civics,* and *National Achievement Geography* tests were given at the beginning of the experiment. Different forms of all these tests, except the *Mental Maturity*, were given at the mid-point; that is, when the audio-visual materials were shifted to the classes which had had none, and at the end of the project.

The pre-tests showed an almost perfect matching of the paired classes on mental ability and achievement. In fact, the differences between the average I.Q. and *Progressive Achievement* averages of paired classes did not exceed two tenths of a grade point.

During the whole experiment 56 teacher-made tests were given to all four classes. In order to make these tests as valid as possible the supervising principal first previewed the audio-visual material and then constructed the tests on the basis of the information made available in these audio-visual materials. The same information was made available for the non-audio-visual classes. These tests were of the objective type, completion, multiple choice, matching, true-false.

Results

The results of this experiment are summarized in Tables I and II. Space will not permit comments on details. However, attention will be called to the gains of all four classes on the standardized tests. The average gain on *Progressive Achievement* by classes with audio-visual was .6, without .4; on *National Achievement History and Civics* with audio-

visual 1.5, without .4; on *National Achievement Geography* with audio-visual –.1, without 1.1.

Table I

Averages of Gains in Grade Points Made on Standardized Tests by Classes With and Without Audio-Visual Materials

Class	With Audio-Visual			Without Audio-Visual		
	Progressive Achievement Test	*National Achievement*		*Progressive Achievement Test*	*National Achievement*	
		History and Civics	*Geography*		*History and Civics*	*Geography*
A	.4	1.9	–.4	.5	.1	.8
A-1	.5	1.5	–.2	.4	1.4	1.7
B	.8	1.2	.0	.1	.1	.5
B-1	.5	1.5	.4	.6	.1	1.3
Average Gains	.6	1.5	–.1	.4	.4	1.1

The results of sixteen of the teacher-made tests, samples selected at random, are found in Table II. An examination of the results shows that the classes *with* audio-visual materials excell the other classes on some tests and drop below them on others. The test average of the superior ability classes with audio-visual materials was 40.2; without audio-visual materials, 40.4. The test average of the lower ability classes with audio-visual materials was 34.3, and without audio-visual materials was 36.4.

Table II

Average Scores Made on Teacher-Made Tests by Superior and Lower Ability Classes With and Without Audio-Visual Materials

Title of Test	Superior Classes		Lower Ability Classes	
	With Audio-Visual	*Without Audio-Visual*	*With Audio-Visual*	*Without Audio-Visual*
Indian Adventure	22.4	20.6	22.5	19.9
Westward Expansion	106.8	108.5	98.8	91.5
New Fort at Chicago	15.4	14.6	14.6	13.6
Saga of the Soil	20.8	17.6	16.9	23.9
King Came to Breakfast	16.6	18.8	11.2	17.0
Alaska	16.1	18.9	17.3	15.9
Oil From the Earth	20.8	17.6	16.9	23.9
This Heritage of Ours	40.7	40.7	30.4	26.8
Abraham Lincoln	16.6	16.6	14.1	15.5
Reconstruction Civil War	11.5	12.8	7.7	11.3
Southern Independence	17.3	19.5	13.0	17.4
Lewis and Clark	18.1	19.0	16.2	17.6
John C. Fremont	14.3	13.8	11.2	9.8
U.S. History	70.5	69.9	66.5	60.0
Constitution	195.1	197.5	161.2	192.0
Total Scores	643.7	647.1	548.9	582.9
Averages	40.2	40.4	34.3	36.4

Conclusions

1. The data collected in this experiment showed no significant difference between the effectiveness of learning by the classes that used quantities of audio-visual materials and those which were taught in the usual way with no audio-visual materials.

2. There was no significant difference between the proportionate gains made by the lower ability audio-visual classes and the gains made by the superior ability audio-visual classes.

3. Pupils in audio-visual classes developed more resourcefulness in completion of projects and more insight into the solutions of problems, but not more initiative and willingness to begin projects.

4. The audio-visual approach improved and expedited the crafts work done by the pupils.

5. The preparations for presentation, pre-planning, and follow-up with the children were so time-consuming in extensive use of audio-visual materials that some phases of the program had to be neglected.

6. Audio-visual materials were used so extensively in this experiment that they had a tendency to dull the interest of the pupils in such materials.

General Appraisal

It is recognized that other benefits than improvement in learning may come from the use of audio-visual materials. However, if materials are used for promoting more efficient learning and they fail to do so, the use of these materials may be questionable.

No claim is made that the results of these experiments are conclusive. However, these results and the results of other studies of the extent to which audio-visual materials promote learning may justify some working generalizations or recommendations.

1. As shown in many studies, audio-visual materials which promote improvement in learning are designed to teach specific concepts or skills under specific conditions, would it not be in order for us to urge development and use of audio-visual materials more definitely in terms of specific learning situations?

2. Much attention should be given to the improvement of instruments and methods for evaluating audio-visual materials and their uses in our school program.

3. Every effort should be put forth to make all audio-visual materials used to promote learning a vital and integrated part of the teaching-learning program with which the class is concerned.

Correction

In the January issue we called attention to the symposium on teachers' salaries and salary schedules in the Spring 1952 issue of *The Harvard Educational Review*. Those interested in sending for the *Review* should write to HARVARD EDUCATIONAL REVIEW, Lawrence Hall, Kirkland Street, Cambridge 38, Massachusetts, rather than the address previously given.

Research News and Views

On recommendation of the California State Advisory Council on Educational Research, the U. S. Office of Education is sponsoring a national conference on the problem of improving test norms. The conference will be held in Chicago on March 27 through April 2, 1953, at the time of the American Personnel and Guidance Association Convention. The request for the conference grew out of a special study of one of the subcommittees of the State Advisory Council on Educational Research. Dr. Merle Elliott, director of research for the Oakland City Schools, will attend the Chicago conference as the official representative of the Advisory Council.

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A recent NEA Research Division bulletin, "Implications of Armed Forces Qualifications Test Results for Education in the United States," reports that, from July 1950 to June, 1951, 16.4% of selective service registrants in the continental United States were rejected by the armed forces for failure to pass the *Armed Forces Qualification Test.* Rejections ranged from 1.3% in Minnesota to 56.0% in South Carolina. The report includes a table which gives the following information for each state: (a) per cent of rejections, (b) current expenditure per pupil in average daily attendance for 1949-50, (c) per-capita income payments for 1950, and (d) index of per-capita income payments based on the U. S. average of 100. The report reveals that some serious deficiencies still exist in the progress toward our goal of universal education, and that the deficiencies appear greatest in those states where expenditures for public education have been low.

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Study of the Special Needs of Elementary School Children in Santa Barbara County Schools is the title of a research report prepared by Norah Clancy under the direction of Dr. Faith Smitter, director of guidance in the Santa Barbara County Schools. Extensive data are given on the following problem areas: (1) gifted and talented children; (2) mentally retarded children; (3) emotionally disturbed children; (4) children with severe reading difficulties; (5) speech problems; (6) home conditions of elementary school children in Santa Barbara County schools; (7) children from homes in which a foreign language is spoken; and (8) children with health problems. One interesting fact disclosed in the report is that approximately 47% of the 7,527 children who comprise the total elementary school population, or 3,578, were reported by teachers and nurses as having one or more special needs.

Book Reviews

Education in California

Roy W. Cloud. Stanford University Press, 1952. 296 pages.

Written at the request of the California Teachers Association by a man who had served for 20 years as its executive secretary, this book presents detailed, authoritative information on the first 100 years of California education. Mr. Cloud, who died while this volume was on the press, was eminently qualified to write this chronicle of important events in the development of California's school system. A native Californian, he devoted his life to the profession of teaching. More important, he was personally responsible for many of the accomplishments which are described in his book.

The book traces the development and accomplishments of the University of California, Stanford University, the State Department of Education, and the California Teachers Association—just to mention a few. The author also traces the growth of California's educational system by discussing the administration of each state superintendent, and outlining the many legal struggles and official acts that have marked California's progress in education. A special feature of the book is the "portrait gallery"—a rare collection of 45 photographs of important personalities in California education during the past century.

The Administration of Public Education

John T. Wahlquist, William E. Arnold, Roald F. Campbell, Theodore L. Reller, and Lester B. Sands. New York: The Ronald Press Company, 1952. 611 pages.

This book was written by five professors of school administration; three from California, and one each from Pennsylvania and Ohio. Each one has written on his own field of special competence. The 611-page volume appears to do justice to the many ramifications of educational administration. The authors have recognized the importance explaining educational practices in the framework of the democratic philosophy of of education. They have made a constant effort to show how this philosophy can help to solve administrative problems. Typical problems are delineated, and suggested ways of solving them are given, step by step. The book is a valuable addition to the literature in educational administration, and should prove useful to both students and experienced administrators.

Teaching in the Modern Secondary School

Freeman Glen Macomber. McGraw-Hill Book Company, 1952. 348 pages.

This book, which was prepared for prospective secondary school teachers, describes modern classroom teaching procedures. The author covers the important aspects of classroom teaching, including unit planning, securing democratic control, classroom organization for work, evaluation, teacher guidance, introduction to modern classroom curriculum, and basic psychology and philosophy in practice. The book reflects the great changes which have taken place in recent decades in both the philosophy and curriculum of secondary education. It was written primarily with the inexperienced teacher in mind. The author is dean of the school of education at Miami University.

Better Learning Through Current Materials

Lucien Kinney and Katharine Dresden. Stanford University Press, 1952. 215 pages.

This guide to the use of current materials in the modern classroom was first published in 1949. Hailed as the "Educational Book of the Year," it was acclaimed widely by the teaching profession as the first and only book to cover the subject thoroughly. Through a collection of "case studies," numerous examples of how to use current materials such as magazines, books, pamphlets, films, radio broadcasts, and telecasts in teaching are presented to the reader. All of the examples are taken from actual experiences. The book incorporates the results of a workshop in the use of current materials in teaching—a workshop that proved so successful that it became the permanent California Council of Improvement of Instruction.

Measurement in Education

A. M. Jordan. New York: McGraw-Hill Book Company, 1953. 533 pages.

The author, a professor at the University of North Carolina, presents in this new volume a clear definition of the place of measuring instruments in the whole educative process in terms of three major areas: the definition of objectives, learning, and evaluation and appraisal. Included in the book is information on the history, construction, and fundamental principles of testing. Individual chapters present directions regarding measurement in various subject fields and areas. In addition to describing the usual tests, the book calls attention to tests of fine arts and music, mechanical and clerical attitudes, and physical education. Recent advances in measuring for understanding achievement, critical consideration of personality inventories, and evaluation of tests by authorities in the *Third Mental Measurement Yearbook* are covered. It considers newer tests, and the adaptation of social science concepts to measurement. The book is well-written, well documented and illustrated. It should prove to be an excellent source book for teachers, and prospective teachers.

Research Question Box

Question: Since the enactment of state legislation to encourage unification of school districts, how many districts have unified and is there any evidence to show improvement or regression in the educational program resulting from this reorganization?

Answer: *There are in operation in California during the 1952-53 school year a total 75 unified school district. Of these, 32 have become effective since July 1, 1945 at which time the State Commission on School Districts was established. Of these 32, 15 have become effective since the program of school district organization was turned over to the State Board of Education at the expiration of the period for which the original Commission was in operation.*

In addition to these, there have been 5 new unified school districts effected to begin operation as such on July 1, 1953. The best objective evidence available at the moment regarding improvement or regression in educational programs resulting from the formation of unified school districts consists of some information obtained from 17 out of 26 unified school districts in California which were organized since 1944 and prior to July 1, 1952. This information was collected in connection with a study of unified school districts conducted by the U. S. Office of Education. The following is a brief summary of the information reported by these districts:

The 17 unified districts consisted of the area comprised in 106 old districts. In the old districts there were 39 one-room schools in operation in October, 1952. The new districts were operating 12 one-room schools. There was definitely a trend in the new schools to increase the size of attendance centers and to organize the educational program on a K-6-3-3 basis, with an increasing tendency to make six-year high schools in those areas where small high schools had previously existed. There was a definite trend in the improvement of the training status of teachers employed in the area. Before the organization, about 78% of the teachers employed by the old districts

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had AB degrees or better. In the new districts this percentage had increased to 90%. There was a marked increase in the quantity and quality of services rendered to students. Space will not permit all the details but the following are pertinent: All of the new districts are now providing testing service, visual aid service, complete cumulative pupil record service, and audiometric testing; 16 of the 17 now provide central library service, 13 provide physical examination, 11 provide special speech instruction, and 10 provide remedial reading programs and dental clinics.

Among the old districts, central library service was available in 55%; the other services were provided in fewer of the districts, ranging down to remedial reading which was provided in only 6% of the old districts.

Among the curriculum improvements reported, the greatest number related to the provision of greater opportunity for 7th and 8th grade pupils. However, there were listed by one or more of the districts 22 separate curriculur additions on the secondary level effected subsequent to reorganization. On the elementary level the number of different items was not so great, but they were reported with more frequency. The more significant included the addition of music programs, remedial reading, arts and crafts, kindergarten, and some shop instruction.

A marked improvement was noted in the case of salary schedules. All but one of the new districts have officially adopted salary schedules in force during 1952-53, whereas only 15 of the old districts were operating with any kind of schedule of salaries. No mention has been made here of the advantages relating to management and business practices which were noted by all except the very large districts. This picture may seem one-sided, but there appears to be no evidence of regression with respect to the education program in any of the unified districts of California.

A complete report of the findings of the study from which the above statements are quoted will be forthcoming in the near future and will be available to all interested persons.

The Journal is indebted to Dr. Drayton B. Nuttall, Chief, Bureau of School District Organization, California State Department of Education, for supplying the information given above.